

Patient-Specific Models of Deep Brain Stimulation

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Challenge/Problem: Programming deep brain stimulation (DBS) devices for maximal clinical benefit is a difficult and time consuming process that typically requires highly trained and experienced individual to achieve acceptable results.

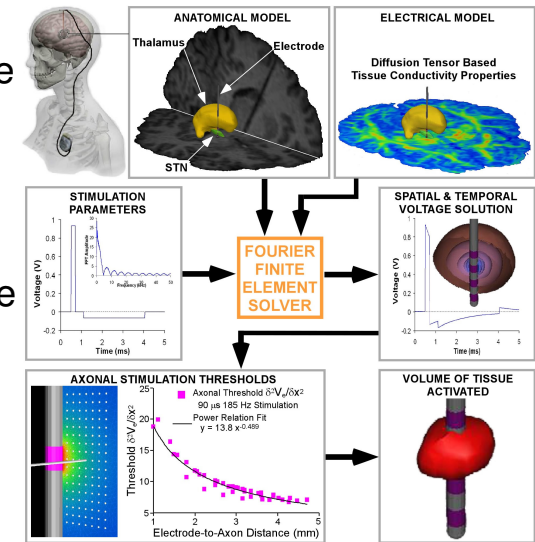
Approach: Develop detailed computer models customized to individual patient that can predict the anatomical and electrical effects of the stimulation. Then use the models to predict theoretically optimal stimulation parameter settings that represent the start point for clinical evaluation.

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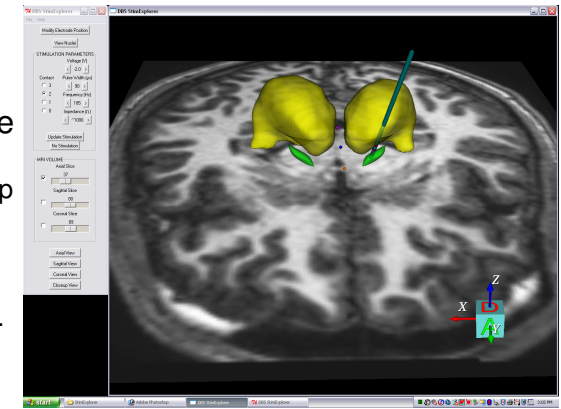
Progress: We have developed the supercomputing infrastructure to accurately predict the volume of tissue activated by DBS



Current Product: StimExplorer Software System

Clinician-friendly
Window-based 3D
visualization software

Butson et al. (2005) Deep
brain stimulation
interactive visualization
system. Soc. Neurosci.
Abstr., 898.7, Wash D.C.



Future Plans: We are continuously evolving of our computational models of DBS with ongoing clinical testing

Keywords: Parkinson's disease, deep brain stimulation, subthalamic nucleus, computer software